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**Report of Voting/Annex B**

| MEMBER BODY | COMMENTS | OBSERVATIONS OF THE PROJECT |
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| UK | **ISSUE NUMBER UK-104-01**<br>AUTHOR : David Leal<br>CLAUSE : 5.5.8 node_geometric_relationship<br>CLASSIFICATION : Technical and editorial<br>PROBLEM DESCRIPTION : It can be convenient to assign a group of nodes to a geometric representation.<br>PROPOSED SOLUTION : Make the attribute node_ref a node_group. | The SELECT TYPE node_or_node_group was introduced that enables assignment of either a node or a group of nodes to a geometric representation. |
| UK | **ISSUE NUMBER UK-104-02**<br>AUTHOR: Ray Goult<br>CLAUSE: 5.5.9 element_geometric_reference and 5.5.18 consistent_geometric_reference<br>CLASSIFICATION: Technical and Editorial<br>PROBLEM DESCRIPTION: The association between FEA constructs and shape representation should permit reference to (edge_curve or curve) and to (face_surface or surface) when appropriate. (See later issues (104-08 and 104-09). The semantics are unclear; we assume, for example, that the association between an edge of an element and a geometric curve (or edge_curve) means that the two are geometrically coincident. Either 104 or 209 should provide further explanatory text.<br>The documentation of the function should explain the precise requirements being checked - at present these can only be deduced by reading the EXPRESS. Why is polyloop included as a special case of 'pseudo curve' ?<br>PROPOSED SOLUTION: Re-write function consistent_geometric_reference and improve the description. | The FUNCTION consistent_geometric_-reference was rewritten to allow references to edge_curve and face_surface. Reference to poly_loop was deleted. The function description was expanded. |

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| UK | **ISSUE NUMBER UK-104-03**<br>AUTHOR : David Leal<br>CLAUSE : 5.6.5 dummy_node and 5.8 element topologies<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : The term 'missing node' which occurs on pages 56 and 102 is misleading, because the node is not 'missing' but instead it is not part of the element formulation.<br>PROPOSED SOLUTION: The text on page 58 should read:<br>A dummy_node is a placeholder in the node_list for an element_representation, that is used where an element_representation does not have a mid_edge, mid-face or mid-volume node shown in the node sequence diagrams in Figures 10 to 39.<br><br>EXAMPLE - The node sequence diagram for a quadratic quadrilateral in Figure 20, shows a ninth mid-face node. The node_list for an element_representation that is an eight noded serendipity element has a dummy_node in the ninth position.<br><br>NOTE - An instantiation of an FEA model has only one instance of dummy_node.<br><br>The note on page 102 should read:<br><br>NOTE - A dummy_node is referenced as a placeholder if an element formulation does not have a mid-edge, mid-face or mid-volume node shown in the node sequence diagrams in Figures 10 to 39. | The description and references to dummy_node were revised as porposed. |

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| UK | **ISSUE NUMBER UK-104-04**<br>AUTHOR : David Leal<br>CLAUSE : 5.11.5 surface_section_element_location<br>CLASSIFICATION : Technical and editorial<br>PROBLEM DESCRIPTION : Not all surface sections have material discontinuities.<br>PROPOSED SOLUTION: Make the attribute above_material_discontinuity OPTIONAL. | The atribute above_-material_discontinuity is of LOGICAL type, which should be assigned .UNKNOWN. when there is no discontinuity. The attribute description was revised to this effect. |
| UK | **ISSUE NUMBER UK-104-05**<br>AUTHOR : David Leal<br>CLAUSE : 5.12.5 fea_shell_membrane_elasticity<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : In clauses 7.4 and 5.13.1, elasticity is 'd' as a fourth order tensor and 'D' as a 6´6 matrix,. Here (and in the immediately following clauses) it is 'A'.<br>PROPOSED SOLUTION: Add a notation section to clause 3, and stick to it. | The notation was revised for consistency throughout the document. |
| UK | **ISSUE NUMBER UK-104-06**<br>AUTHOR : David Leal<br>CLAUSE : 5.13.6 curve_element_section_derived_definitions<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : In some places 'L' is used for position along a curve and in other places 'x'. 't' is used for an applied moment - this is potentially confusing.<br>PROPOSED SOLUTION : Tidy up notation, and define it in clause 3. | The notation was revised for consistency throughout the document. |

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| UK | **ISSUE NUMBER UK-104-07**<br>AUTHOR : David Leal<br>CLAUSE : 5.13.6 curve_vector_2d_variable<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : The definition of curve_element_curvature is inconsistent with curve_thermal_gradient and curve_bending_moment (I think - please check this).<br>PROPOSED SOLUTION: A better definition of curvature is (in LaTeX):<br>{\bf \chi} = \left(\begin{array}{c} -\frac{\partial^{2} w}{\partial x^2} \\ \frac{\partial^{2} v}{\partial x^2} \end{array} \right) | Curvature definitions were revised for consistency throughout the document. Figure 55 was added to illustrate the sign convention on bending moments. |
| UK | **ISSUE NUMBER UK-104-08**<br>AUTHOR: Ray Goult<br>CLAUSE: 6.4.17 curve_constraint<br>CLASSIFICATION: Technical<br>PROBLEM DESCRIPTION: The restriction in WR1 of this entity is too specific. It requires the item being referenced to be a curve. In geometric models the curve is frequently un-bounded and an edge_curve is more likely to exactly represent the geometry to which the constraint is applied. There may well be instances where 2 edge_curves (defining different bounded portions) reference the same curve instance as edge_curve.edge_geometry.<br>PROPOSED SOLUTION: Re-write WR1 to permit required_curve.item to be either an edge_curve or a curve. | WR1 was revised per proposed solution. |

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| UK | **ISSUE NUMBER UK-104-09**<br>AUTHOR: Ray Goult<br>CLAUSE: 6.4.18 surface_constraint<br>CLASSIFICATION: Technical<br>PROBLEM DESCRIPTION: The restriction in WR1 of this entity is too specific. It requires the item being referenced to be a surface. In geometric models the surface is frequently un-bounded and a face_surface is more likely to exactly represent the geometry to which the constraint is applied. There may well be instances where 2 face_surfaces (defining different bounded portions) reference the same surface instance as face_surface.face_geometry.<br>PROPOSED SOLUTION: Re-write WR1 to permit required_surface.item to be either a face_surface or a surface. | WR1 was revised per proposed solution. |
| UK | **ISSUE NUMBER UK-104-10**<br>AUTHOR : David Leal<br>CLAUSE : 6.6.8 state_relationship<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : The definition of state_relationship in ISO/DIS 10303-104 does not make it clear that a state can be built up from parts for data management convenience, where the division into parts concerned may not have any engineering significance.<br>PROPOSED SOLUTION :  A state_relationship is an association between two states (related and relating), that indicates all the information about the related state is also about the relating state.  A related state is an aspect of a relating  state.<br><br>NOTE - A state_relationship enables different aspects of a state such as   boundary conditions, external loads, and thermal loads to be managed as  separate 'states'. An initial_state for a control_analysis_step can be  defined as a combination of different aspects.<br>The partitioning of a state into aspects is solely for information  management convenience, and has no engineering significance. | The definition was revised per the proposed solution. |

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| UK | **ISSUE NUMBER UK-104-11**<br>AUTHOR : David Leal<br>CLAUSE 6.7.95 surface_3d_node_field_section_variable_values<br>CLASSIFICATION : Editorial<br>PROBLEM DESCRIPTION : A variable evaluated at points within the section of a surface is a volume_variable, and not a surface_element_variable.<br>PROPOSED SOLUTION: Change the attribute variable to reference volume_variable. | No change is necessary as surface_element_variable is a SELECT TYPE that includes volume_variable. |
| UK | **ISSUE NUMBER UK-104-12**<br>AUTHOR: Ray Goult<br>CLAUSE: 2 Normative references<br>PROBLEM DESCRIPTION: Where available the 2nd edition of resource parts should be referenced.<br>In particular referencing part 42 DIS would avoid duplication of cylindrical_point and spherical_point entity definitions. | The cylindrical_point and spherica_point entity definitions were removed. These entities are now referenced from Part 42 TC3 EXPRESS (WG12 N546) |
| UK | **ISSUE NUMBER UK-104-13**<br>AUTHOR : Derek Pashley<br>CLAUSE :<br>CLASSIFICATION : Technical and editorial<br>PROBLEM DESCRIPTION : ERROR OF OMISSION. Although Part 104 allows for axisymmetric models to have Fourier loading and response (as displacements from a quasi-stastic and mode shapes from a frequency analysis), it does NOT allow for "finite Fourier analysis" (ref Irons and Ahmad, Techniques of Finite Elements, Ellis Horwood, 1980) on cyclically symmetric structures (also know as sectorially symmetic).<br>PROPOSED SOLUTION : Include cyclic symmetry in the next release of 104 (and 209). It is believed that other common forms of symmetry are also missing and should be included in later releases.<br>NB it would be convenient, but not imperative, to permit complex numbers as it is common for the mode shapes derived from such analyses to be expressed in this form; the alternative is "double real", where each degree of freedom has a phase and quadrature component. | Agreed for next edition work.. |

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| USA | **ISSUE NUMBER: USA, 104DIS, 01**<br>AUTHOR: USA<br>CLAUSE: 5.5.5<br>CLASSIFICATION : Minor Technical<br>PROBLEM DESCRIPTION: ISO 10303-104 has almost the same spherical coordinate as ISO the second edition of 10303-42.<br>PROPOSED SOLUTION: (optional) As a minimum, 104 should coordinate with Project Leader for the Second Edition of 104 so that the spherical coordinate is the same entity. | The cylindrical_point and spherical_point entity definitions were removed. These entities are now referenced from Part 42 E1 TC3 EXPRESS (WG12 N546) |
| USA | **ISSUE NUMBER: USA, 104DIS, 02**<br>AUTHOR: USA<br>CLAUSE: 2<br>CLASSIFICATION : Minor Technical<br>PROBLEM DESCRIPTION: ISO 10303-104 references 10303-41:1994 that has been replaced with ISO/DIS 10303-41:1999.<br>PROPOSED SOLUTION: (optional) Document should evaluate usage of the 2nd edition of ISO 10303-41. ISO 10303-41 may be replaced prior to this document being an IS. | Due the large number of complications in using the 2nd edition documents, their use was deferred to the second edition work for Part 104. |
| USA | **ISSUE NUMBER: USA, 104DIS, 03**<br>AUTHOR: USA<br>CLAUSE: 2<br>CLASSIFICATION : Minor Technical<br>PROBLEM DESCRIPTION: ISO 10303-104 references 10303-43:1994 that has been replaced with ISO/DIS 10303-43:1999.<br>PROPOSED SOLUTION: (optional) Document should evaluate usage of the 2nd edition of ISO 10303-43. ISO 10303-43 may be replaced prior to this document being an IS. | Due the large number of complications in using the 2nd edition documents, their use was deferred to the second edition work for Part 104. |
| USA | **ISSUE NUMBER: USA, 104DIS, 04**<br>AUTHOR: USA<br>CLAUSE: 2<br>CLASSIFICATION : Minor Editorial<br>PROBLEM DESCRIPTION: Throughout the document Table and Figure titles should be 14 point font/.<br>PROPOSED SOLUTION: (optional) | The document was redone using the latest LATEX style files. |